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Boronic acid polymer complex responsive to sugar - use for self regulation of glucose level in diabetes and for admin. of other medicaments
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Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 424168	A	19910424	EP 90311485	A	19901019	199117 B
CA 2027930	A	19910420				199126
AU 9064754	A	19910711				199135
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JP 3087293	B2	20000911	JP 90241192	A	19900913	200046

Priority Applications (No Type Date): JP 90241192 A 19900913; JP 89270215 A 19891019; JP 90241191 A 19900913; JP 90275441 A 19901016; JP 99297752 A 19900913
Cited Patents: 2.Jnl.Ref; WO 8304255
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 424168	A		20		
	Designated States (Regional): BE CH DE FR GB IT LI NL SE				
JP 4124144	A		7	A61K-047/30	
JP 4124145	A		7	A61K-047/32	
EP 424168	B1	E	21	A61K-047/32	
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DE 69003068	E			A61K-047/32	Based on patent EP 424168
TW 218353	A			A61K-031/80	
KR 9301305	B1			A61K-047/48	
US 5478575	A		12	A61K-038/28	Cont of application US 90599718
CA 2027930	C			A61K-047/48	
JP 2874309	B2		6	A61K-047/32	Previous Publ. patent JP 4124145
JP 3018463	B2		6	A61K-047/48	Previous Publ. patent JP 3204823
JP 2000086534	A		6	A61K-047/30	Div ex application JP 90241192
JP 3087293	B2		5	A61K-047/30	Previous Publ. patent JP 4124144

Abstract (Basic): EP 424168 A

Polymer complex, of a sugar esponse type, comprising one or more polymers having boronic acid gps. is new.

USE/ADVANTAGE - The complex, linked to insulin derivs., is used for treatment of diabetes mellitus. Other medicines which are water soluble and have OH gps. can also be linked to the complex e.g. bronchodilation, cardiotonic and anti-tubercular agents, having cis-diol or cis-hydroxy gps. The complex has an auto-feedback system. Increase in sugar (glucose) concn. causes an exchange reaction with the medicinem bonded to the benzeneboronic acid gp. and the medicine is released. Conversely, with lowered glucose concn., there is less exchange, and drug release lowered. Also, the polymer swells in proportion to . sugar concn. allowing easier diffusion. Prior art boric acid complexes with polyvinyl alcohol are not suitable for this method . because of boric acid toxicity. (20pp Dwg.No.0/2)

Abstract (Equivalent): EP 424168 B

A polymer complex of a sugar response type for delivery of medicines comprising at least one polymer having benzene boronic acid groups and at least one medicine contained in or linked with the polymer complex.

Dwg.0/2

Abstract (Equivalent): US 5478575 A

Method for treating diabetes comprising, administering a polymer insulin complex to a diabetic patient wherein insulin is released from said complex in response to a sugar concentration in blood of the diabetic patient, wherein the polymer insulin complex contains at least one polymer having benzene boronic acid groups and insulin or an insulin derivative having hydroxy groups;

said polymer having a molecular weight between 5,000 and 300,000, the content of benzene boronic acid monomers forming said polymer having boronic acid groups being 0.1 to 30 mole % and the at least one polymer being a homopolymer or copolymer of 3-acryloylamino benzeneboronic acid, 3-methacryloyl aminobenzene boronic acid or 4-vinybenzeneboronic acid, and

wherein the polymer insulin complex releases 0-500 mg/ml of insulin or said insulin derivative having hydroxy group in response to 0-500 mg/dl of sugar in the blood of said diabetic patient such that an increase in blood sugar causes an increase in said insulin or said insulin derivative being released from said polymer insulin complex.

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Derwent Class: A96; B04; P34

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